PROJECT COST SUMMARY

Fort Drum

PROJECT STATISTICS	
Total # Items	1
Total # Buildings	1 (2,731 SF)
Total # Structures	0
Estimated Project Cost	$45,600
Buildings Removal Cost	$45,600 ($16.70/SF)
Structures/Utilities Removal Cost	$0
User-Adjusted Project Cost	$44,090
Estimated Project Diversion	**32%**
Reported Tipping Fees	$40/ton
Report Date	25 Jun 2007

ITEM REMOVAL COST SUMMARY

FAC NO	*CATCD/USE*	*DESCRIPTION*	*QTY (UM)*	*TOOLBOX ESTIMATE*	*USER ADJUSTMENT*
	Administrative Facilities	**Administrative Facility, Type 1**	2,731 (SF)	$45,600 ($16.70/SF)	$44,090 ($16.14/SF)

ESTIMATED PROJECT COSTS BY CATEGORY

COST COMPONENT	*TOOLBOX ESTIMATE*
Demolition	$15,900
Tipping Fee (Disposal)	$4,800
HAZMAT/Environmental	$24,900

TOOLBOX BUDGETARY PROJECT ESTIMATE: $45,600

(User-Adjusted Project Cost: $44,090)

Note: This budgetary project estimate was developed for the facilities specified above. The cost per facility may be affected if items are added or deleted.

PROJECT DIVERSION SUMMARY

ITEM DIVERSION GOAL SUMMARY

FAC NO	*CATCD/USE*	*DESCRIPTION*	*C&D DEBRIS (tons)*	*DIVERSION GOAL (tons)*	*(% of item)*
	Administrative Facilities	Administrative Facility, Type 1	109	35	32
		TOTAL	**109 tons**	**35 tons**	**32%**

PROJECT DIVERSION BY SWARS CATEGORY

(TOTAL C&D Debris: 109 tons)

DIVERSION CATEGORY	*ESTIMATED DIVERSION (TONS)*	*% OF TOTAL C&D DEBRIS*
Masonry/Asphalt/Concrete/Stone	35	32
Metal	Negligible	
Wood	Negligible	
Land Clearing Debris	Negligible	
Other Debris	Negligible	
Diversion Goal	**35 tons**	***32%***

*This project is **NOT EXPECTED** to meet requirements of the Army policy for Sustainable Management of Waste in Military Construction, Renovation, and Demolition. Facilities typically associated with low diversion quantities should be packaged with facilities typically associated with high diversion quantities.Activities.*

The success of deconstruction, recycling, relocation and other diversion techniques can vary depending on construction variances and local market demands.

***Helpful Links**:*

- *Army Diversion Policy*
- *FRP Guide to Diversion Opportunities*
- *Typical Diversion opportunities for Toolbox Categories*
- *UFC 1-900-01, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste*

ITEM DETAIL SUMMARY

ITEM 1 ***Administrative Facility, Type 1***

FAC NO	***CATCD/Use*** Administrative Facilities	***Area*** 2,731 (SF)

Item Details

CONSTRUCTION
Foundation: *CMU/Concrete*
Floor: *Timber/Wood*
Walls: *Wood frame*
Roof: *Wood frame*
No. Floors: *1*

HAZMAT/ENVIRONMENTAL
- ACM: Roofing/Mastic: *4636 (SF)*
- ACM: VAT - Floor Tile: *2700 (SF)*
- UST's: *2500 (GA)*
- Waste POL's (sludge): *55 (GA)*

Item Cost Summary

Category	*Cost*	*User Adjustment**
Demolition	$15,900	**$44,090**
Tipping Fee	$4,800	
HAZMAT/Environmental	$24,900	
Total	**$45,600**	

*Justification: UST backfill, abatement and site restoration

Item Waste Diversion Summary

Estimated C&D Debris (tons): 109

SWARS Category	*Diversion Goal* *(tons)*	*(%)*
Masonry/Asphalt/Concrete/Stone	35	32
Metal	Negligible	
Wood	Negligible	
Land Clearing Debris	Negligible	
Other	Negligible	
Estimated Diversion	**35 tons**	**32%**

Assumptions

General Assumptions

- Labor rates have been adjusted for your local region based on Facility Location selection. Wages are based on Davis-Bacon prevailing wages, including fringe benefits, and an allowance using the national average for Workers' Compensation Insurance.
- The following allowances have been added to the cost of your project estimate:
    - costs associated with typical contractual or regulatory requirements such as site investigation and work plan development;
    - contractor/equipment mobilization and demobilization;
    - temporary fencing;
    - disconnecting and capping utilities;
    - General and Administrative (G&A) costs;
    - general insurance and bonds; and
    - other typical administrative, overhead, profit, and project related ancillary activities.

Construction Materials Assumptions

- Concrete, concrete/cinder block and brick will be either hauled to a commercial recycler or crushed on-site for use as backfill or base material.
- Structures at grade are assumed to have a three (3) foot crawl space that will have to be backfilled with import material or crushed concrete materials.

HAZMAT/Environmental Assumptions

- The budgetary estimate for removal of POL structures accounts only for removal of stored contents and assumes that no spills or contamination has occurred.

C&D Assumptions

- C & D materials (demolition waste) will be hauled to a landfill at an assumed distance less than a 20 mile radius.

Diversion Assumptions

- The baseline assumption used to develop cost estimates is based on near 100% recycle of all concrete and metals. Diversion values may be increased if additional diversion techniques can be employed for your location.

Best Practices

Construction Materials Best Practices

- A facility has been selected that is typically associated with low waste diversion quantities. Such facilities should be packaged with other facilities containing a high diversion quantity to meet the **Army's 50% Project Diversion Goal**. To learn more about packaging buildings to achieve diversion success for a project , consult the **Toolbox Diversion table** for a graphic depicting structures with high and low diversion rates.
- A selection has been made that indicates significant quantities of **CMU/concrete materials** may be present. CMU/concrete should be **crushed** on-site and retained for aggregate/stabilization material or sent off-site to a commercial recycling facility.
- Structures such as pools or buildings that contain basements, are built on slopes, or have other extenuating circumstances that will result in a large void when the structure is removed, may require significant backfill materials. The cost to import backfill materials can be very significant to the overall cost of a project. When significant amounts of concrete, CMU, or other masonry materials will be available, **on-site crushing** and retainment for backfill can often reduce landfill AND backfill costs.

Economy of Scale Best Practices

- The base project costs ($/SF) maybe reduced if additional facilities can be added to this project. As a rule of thumb, approximately 10,000 SF of buildings or equivalent are necessary to exceed cost associated with crew and equipment mobilization and other overhead costs.

C&D Best Practices

- Tipping fees at off-site waste disposal facilities can be significantly reduced by mandatory diversion of all concrete and metal C&D debris. When significant quantities of concrete do not justify on-site crushing, materials should be stockpiled for future crushing or hauled to an off-site recycling facility.

Diversion Best Practices

- Estimates indicate that less than 50% diversion may be achievable for this project. Diversion estimates should be reconsidered if facilities are added or removed from this project. Diversion estimates typically assume employment of the best practices listed below.
    - Crush concrete on-site, send to commercial recycler, or store on-site for future crushing/use (Helpful Reference document - PWTB 200-1-27, Reuse of Concrete Materials from Building Demolition.
    - All metals should be sent to salvage/recycling center.
    - Wood salvage is rare and requires solid, large-dimension timber to be economically practical. However, a cheap labor pool (i.e. volunteers) has been used for some deconstruction pilot projects. If mulch or soil stabilization materials are in demand at your installation, wood grinding may also be a consideration to elevate project diversion.
    - Gypsum recycling is limited based on current market conditions, but can be achieved in certain regions. Check with local recyclers to determine practicality for your location.

- Equipment, fixtures, doors, windows, and other select items may be effectively removed for reuse under certain conditions. Some charitable organizations (i.e. Habitat for Humanity) have been effective in certain areas. Special attention should be given to experience and safety when employing such methods of diversion.

For more information regarding Diversion methods and practices, see the FRP Guide to Diversion Opportunities document.

General Best Practices

- All contractor candidates should be allowed to inspect a facility without restraint, including partial demolition, to alleviate disclosure allegations and potential overlooked items.
- When practical and budgets permit, using a single contractor to manage the demolition and environmental activities will eliminate contractor cross-liability, minimize work interruptions if environmental issues are uncovered, and simplify contracting and management.
- When practical, Firm Fixed Price contracts secured by open and competitive bid are recommended.